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THE ROLE OF LTRS RESPONSE TO DROUGHT IN SELENIUM-TREATED WHEAT

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Abstract

Wheat is one of the most significant food crops among cereals worldwide in terms of cultivation area and consumption. The reduction in wheat yield due to stress conditions has a major impact on economy. Long Terminal Repeat (LTR) retrotransposons are considered to be one of the most important mobile elements, which are moved by the environmental alterations in plant genome and are remarkable in the rearrangement of the genome. The research has been structured to elucidate the impact of selenium on DNA damage and LTR retro-transposition polymorphism in wheat subjected to drought stress. IRAP (Inter-Retrotransposon Amplified Polymorphism) and REMAP (Retrotransposon-Microsatellite Amplified Polymorphism) procedures were used to describe the DNA damage stages and retro-transposition polymorphism. The outcomes revealed that drought stress induced by polyethylene glycol (-4, -6, -8 bar PEG 8000) led to a rise in retro-transposition polymorphism, and also a reduction in genomic template stability (GTS). However, DNA damage and retro-transposition polymorphism decreased by treatment with disodium selenite (6, 8 and 10 µM of Na_2O_4Se) co-treated with similar dosages of PEG 8000. These results suggest that drought-induced destructive impacts on wheat could be alleviated by exogenously applied disodium selenite.

Keywords: genomic template stability, IRAP, REMAP, retro-transposition polymorphism

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